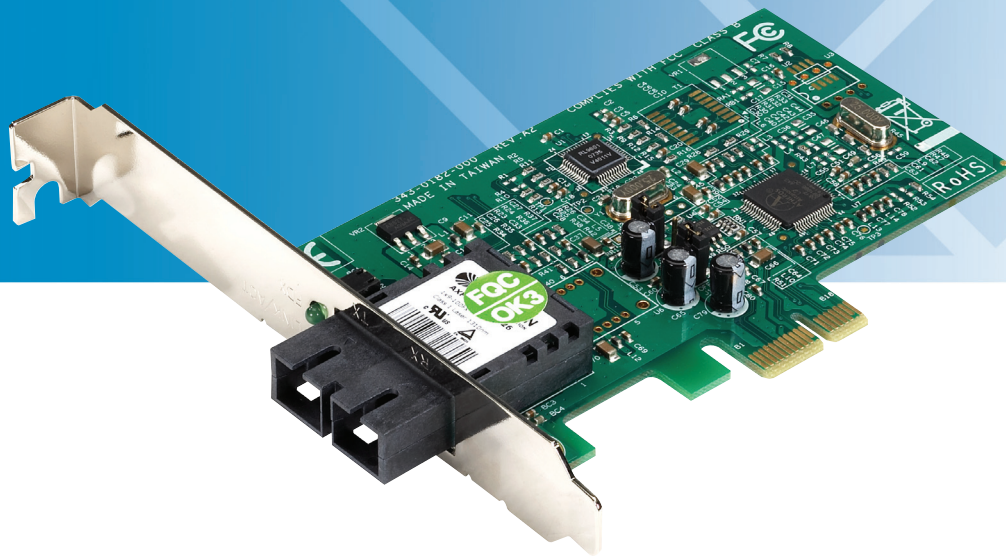


100BASE-FX PCI-Express Fiber Adapter

Bring fiber to the desktop by installing this card in a PC's PCI-E slot.

- > Provides up to 200 Mbps of full-duplex bandwidth capacity for high-end system demands.
- > Delivers maximum bandwidth and bus efficiency with a lower power consumption.



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Federal Communications Commission and Industry Canada Radio Frequency Interference Statements

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

Instrucciones de Seguridad (Normas Oficiales Mexicanas Electrical Safety Statement)

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá de lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico debe ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

Bus Slot — PCI-e 1.1 compliant

Compliance — EMI standard, FCC Class B

Fiber Cable Supported — 62.5-/125-μm or 50-/125-μm multimode

Operation — Full-duplex with NWay flow control

Software Supported — Windows® 2003, Windows 2008 Server, XP, Windows Vista®; Windows 7, Novell® NetWare® 5.x, 6.x; Linux®; PXE Boot ROM

Speed — 100 Mbps

Standards — IEEE 802.3u Fast Ethernet (100BASE-FX), IEEE 802.3x full-duplex flow control, IEEE 802.1Q VLAN

Connectors — LH1390C-SC-R2: (1) pair of SC (1310-nm multimode);
LH1390C-ST-R2: (1) pair of ST (1310-nm multimode)

Indicators — LEDs on bracket: (1) LINK/ACT, (1) FDX

Temperature (Ambient) — 32 to 122° F (0 to 50° C)

Humidity — 5 to 90%

Power — From the PCI-E bus; maximum 3W, +3.3 VDC at 1 A

2. Overview

2.1 Introduction

The 100BASE-FX PCI-Express Fiber Adapter fully complies with all IEEE 802.3u and 100BASE-FX standards. It provides up to 200-Mbps full-duplex bandwidth capacity to support high-end systems. In addition, advanced functions like VLAN filtering packet processing enable the adapter to provide added performance, flexible configuration, and secure networking for users in a standards-based environment.

Two LED indicators (LINK/ACT and FDX) on the bracket give you board link, activities, and full-duplex status. This NIC supports Preboot Execution Environment (PXE).

The PCI-Express (PCIe) design gives you the maximum possible bandwidth and bus efficiency and uses low power. It's ideal for those who are using 100-Mbps fiber cards who want to upgrade their systems to PCI-Express. It enables you to continue using your existing 100-Mbps fiber network without adding new equipment.

Models are available with SC (LH1390C-SC-R2) or ST (LH1390C-ST-R2) connectors.

2.2 Features

- Supports PCI-Express 1.1 interface.
- Includes IEEE 802.3x full-duplex flow control.
- Supports 802.1q VLAN tagging.
- Has Wake-on-LAN (WOL) power management.
- Provides PXE remote boot support.

2.3 What's Included

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

- 100BASE-FX PCI-Express Fiber Adapter
- Software driver and this user's manual (in PDF format) on CD-ROM

2.4 LED Description

Figure 2-1 shows the location of the LEDs on the card. Table 2-1 describes the LEDs.

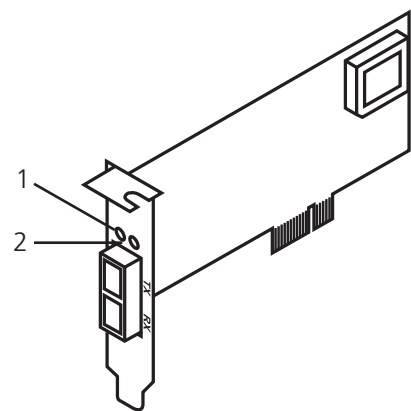


Figure 2-1. Diagnostic LEDs and bracket.

Table 2-1. LED indicators on the adapter.

Number	LED	Color	Function
1	Link/Act	Green	Lights when cable conversion is active and speed is 100 Mbps. Blinks when any traffic is present.
2	FDX	Green	Lights when full-duplex mode is active.

3. Hardware Installation

The following instructions apply to installing the 100BASE-FX PCI-Express Fiber Adapter in most systems. Refer to the manuals that were supplied with your system for details about performing these tasks on your particular system.

To install the fiber adapter, follow these steps:

1. High voltage inside the system presents a safety hazard. Make sure the power is off before removing the cover.

WARNING: Before installing the adapter, make sure that the system power is OFF and unplugged from the power outlet, and be sure to use proper electrical grounding procedures.

2. Remove the system cover and select any empty PCI Express slot. See Figure 3-2. If you do not know how to identify a PCI Express slot, refer to your system documentation.

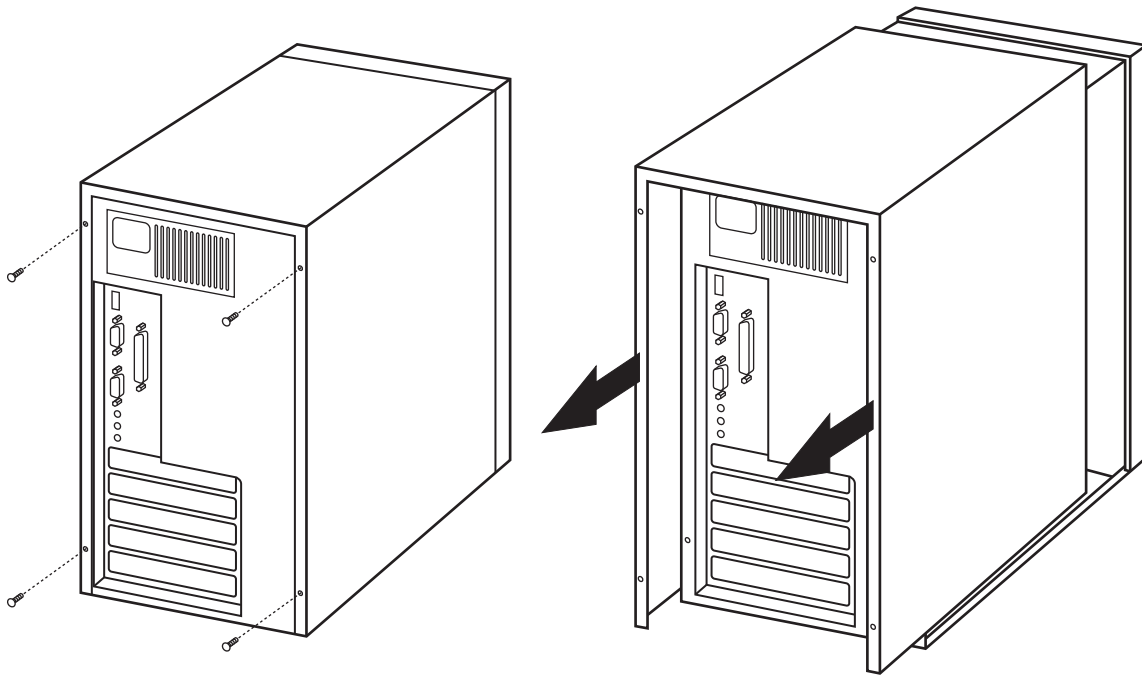


Figure 3-1. Removing the PC cover.

3. Select an empty, non-shared PCI Express slot and remove the faceplate. Keep the faceplate in a safe place. You may need it for future use. See Figure 3-2.

NOTE: If you cannot locate or do not know how to find an PCI Express slot, refer to the documentation that came with your system.

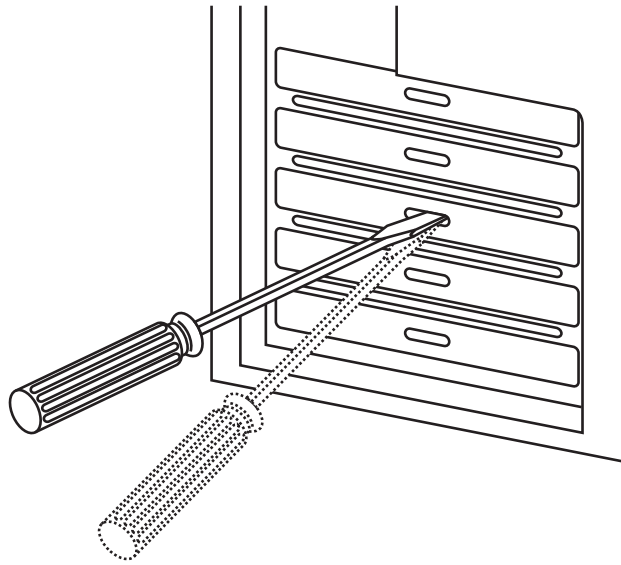


Figure 3-2. Removing the faceplate from PCI slot.

4. Remove the fiber card from the shipping package and store the packaging material in a safe location.

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing the fiber card in a system. Failure to observe this caution could damage the card.

5. Applying even pressure at both corners of the card, push the fiber card until it is firmly seated in the PCI Express slot. Make sure the card is securely seated. See Figure 3-3.

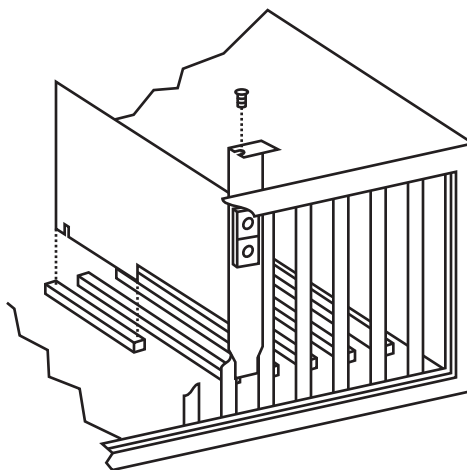


Figure 3-3. Place adapter in the PCI Express slot.

6. Replace the system's cover and secure it with the screws removed in Step 2.

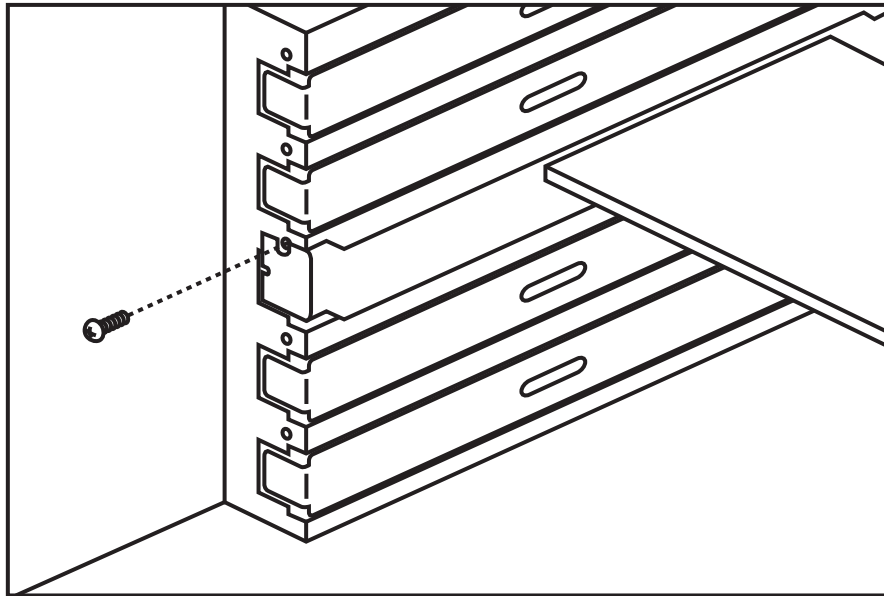


Figure 3-4. Securing the NIC using screws.

7. Disconnect any personal antistatic devices.
8. Power on the system.

4. PCI-Express System and Configuration

Make sure that the PCI-Express PC supports master slots, INT multiple sharing, and timing compatibility.

Do not install 100BASE-FX PCI-Express Fiber Adapter in PCI slave slots. Refer to your PCI system manual and select the appropriate configuration settings.

When installing multiple fiber adapters at the server station, correctly configure the IRQ settings of the PCI slot. You can install up to four fiber adapters in a PCI file server running NetWare. The fiber adapters server boards share the same interrupt line with the driver supporting multiple INT services at a time. The fiber adapter's IRQ should not conflict with other boards.

Configure operation in full-duplex mode via LAN driver options. The operating mode should match the remote link device's working status.

NOTE: To avoid software problems, you must use EMM386 version 4.49 or higher, and install both DOS and EMM386 from the same DOS package.

For motherboards with automatic PCI-Express configuration:

- No specific setup is needed.
- You can enter the system BIOS setup menu to view or specify the interrupt line of the PCI slots.

For motherboards with bus master and interrupt jumpers:

- Enable bus master operation in a selected PCI slot and select an interrupt (IRQ) level using the appropriate motherboard jumper.
- Enable I/O on the fiber PCI-Express slot.

5. Network Connection

A 100BASE-FX network allows 512-bit time delay between any two node stations in a collision domain. The fiber cable with devices' bit-time delay (round trip) is as below:

Number	DTE to DTE	Class II Hub	Fiber Cable
100BASE-FX	100	92	1 m

The overall bit time of fiber wires and devices must be within 512 bits in a segment. You may use a switching hub to break up collision domain and extend the cabling distance.

Fiber cable (multimode) limitations:

Full-duplex switching hub	Node to Node	2 km
	Node to Hub	1 km
	Hub to Hub	2 km

6. Network Remote Boot Configuration

1. Select remote boot type.

From the MBA Configuration Menu, select Remote Boot Type (PXE),

NOTE: To enter the MBA Configuration menu, press Shift + F10 within five seconds after powering on your PC. If you don't, the system will select a Windows operating system.

2. Set network remote boot.

A. Enter PC BIOS.

B. Select the "Boot" tab.

C. Choose "MBA" as the first-priority boot device.

3. Cancel network remote boot

To cancel network remote boot, change the "Boot" setting in PC BIOS from "MBA" to "Hard Drive" or other devices.

7. Wake on LAN (WoL)

The Wake on LAN function enables the adapter to recognize a wake-up frame and signal the PC to power up.

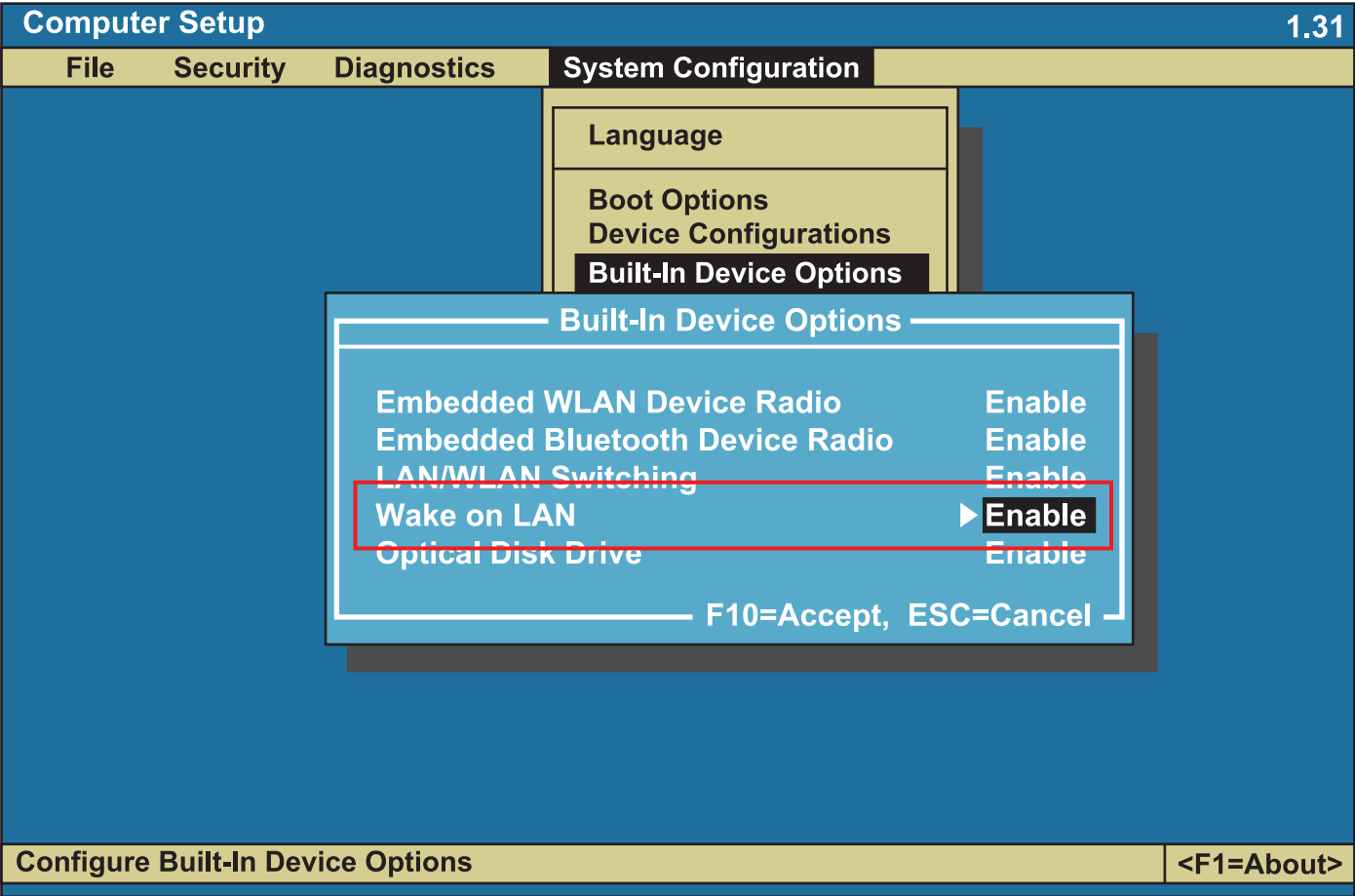


Figure 7-1. Wake on LAN verify screen.

The PC's motherboard must support WoL and PCIe (a wakeup link connector is not required).

To disable the WoL function (default): Set the WoL jumper (J1) to the "OFF" position (see Figure 7-2, slash area).

To enable the WoL function: Set the WoL jumper (J1) to the "ON" position (see Figure 7-2, slash area).

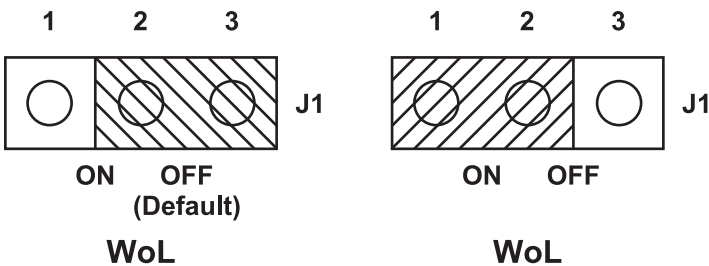


Figure 7-2. WoL jumper Off and On.

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